and of Manchot in particular, proving the production of hydrogen peroxide in such cases. Engler has recently suggested that probably in all such cases hydrogen peroxide is formed simultaneously, half the oxygen molecule going to oxidise the substance present, and the other atom forming hydrogen peroxide. In many cases the formation of the latter substance is difficult to prove on account of its secondary oxidising action upon the substance used. In the current number of the *Berichte*, Dr. H. Biltz describes experiments on the oxidation of the hydrazone of dibromoxybenzaldehyde in alkaline solution by air at the ordinary temperature, and in this case he has been able to prove that the amount of oxygen in the hydrogen peroxide formed is exactly equal to the oxygen used up by the hydrazone.

THE same number of the *Berichte* also contains an account by Prof. Curtius of what appears to be a new general method of preparing aromatic aldehydes from the corresponding acids. By the action of dilute alkalis upon benzhydrazide,

$$C_6H_5.CO.NH.NH_2,$$

benzalbenzoylhydrazine,

$$C_6H_5.CO.NH.N{:}CH.C_6H_5,$$

is obtained, and this gives benzaldehyde upon hydrolysis with dilute acids. Prof. Curtius makes no attempt to explain the mechanism of this reaction, but states that a similar reduction in alkaline solution has been found to take place with many acid hydrazides with formation of the corresponding tertiary hydrazones

$$R.CO.NH.N{:}CH.R,$$

the latter being insoluble substances capable of easy isolation in a pure state, and in good yields. Distillation with dilute sulphuric acid then gives the corresponding aldehyde.

THE additions to the Zoological Society's Gardens during the past week include two Common Marmosets (*Hapale jacchus*) from South-east Brazil, presented by Lady Mackenzie; a Persian Gazelle (*Gazella subgutterosa*) from Central Asia, presented by Mr. B. T. Ffinch; a Red-necked Bustard (*Eupodotis ruficollis* ?) from South Africa, presented by Mr. J. E. Matcham; a Raven (*Corvus corax*), European, presented by Mr. F. Sykes; seven Gold Pheasants (*Thaumalea picta*) from China, presented by Mr. Henry G. Hobbs; a Carrion Crow (*Corvus corone*) captured at sea, presented by Mr. S. T. Henderson; a Bearded Tit (*Panurus biarmicus*), European, presented by Mr. A. R. Gillman; a Spotted Slow Skink (*Acontias meleagris*) from South Africa, presented by Mr. W. L. Sclater; a Green Lizard (*Lacerta viridis*), European, presented by Dr. Dyer; two Severe Macaws (*Ara severa*) from South America, two Spotted Eagle Owls (*Bubo maculosa*) from Africa, a Westerman's Eclectus (*Eclectus westermani*) from Moluccas, six —— Finches (*Munia*, sp. inc.) from India, two Simony's Lizards (*Lacerta simonyi*) from the Canaries, a Mocassin Snake (*Tropidonotus fasciatus*), a Caroline Anolis (*Anolis carolinensis*) from North America, two Leopardine Snakes (*Coluber leopardinus*), two Vivacious Snakes (*Tarbophis fallax*), an Œsculapian Snake (*Coluber longissimus*), a Four-lined Snake (*Coluber quatuorlineatus*), a Lacertine Snake (*Coelopeltis monspessulana*), South European, deposited; two Hog Deer (*Cervus porcinus*), two Dwarf Turtle Doves (*Turtur humilis*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN NOVEMBER.

Nov. 1. 9h. 11m. Minimum of Algol (β-Persei).
4. 6h. 0h. ,, ,, ,,
6. 9h. 54m. to 10h. 58m. π Arietis (mag. 5·6) occulted by the moon.
6. 13h. 47m. to 14h. 31m. ρ³ Arietis (mag. 5·5) occulted by the moon.
11. 14h. 38m. to 15h. 56m. 1 Cancri (mag. 5·9) occulted by the moon.
12. 11h. 54m. to 12h. 58m. A¹ Cancri (mag. 5·6) occulted by the moon.
12. 14h. 45m. to 14h. 56m. A² Cancri (mag. 5·8) occulted by the moon.
14. 5h. Mars in conjunction with moon. Mars 7° 39′ N.
14–15. Epoch of the November meteors. Leonids. (Radiant 150 + 23.)
15. Venus. Illuminated portion of disc = 0·751.
Mars. ,, ,, ,, = 0·896.
15. Saturn. Outer minor axis of outer ring = 15″·99.
18. 13h. Venus in conjunction with moon. Venus 5° 51′ N.
21. 10h. 53m. Minimum of Algol (β Persei).
21. 19h. 23m. Eclipse of the sun invisible at Greenwich.
23. 5h. Jupiter in conjunction with moon. Jupiter 1° 3′ S.
23–24. Epoch of the meteoric shower of Biela's comet. (Radiant 25 + 43.)
24. 7h. 42m. Minimum of Algol (β Persei).
24. 12h. Saturn in conjunction with moon. Saturn 2° 8′ S.
27. 4h. 31m. Minimum of Algol (β Persei).
30. 6h. 11m. to 7h. 7m. κ Piscium (mag. 5·0) occulted by moon.

EPHEMERIS OF EROS FOR NOVEMBER.

Ephemeris for 12h. Berlin Mean Time.

1900.		R.A.			Decl.		
		h.	m.	s.	°	′	″
Nov.	1	2	15	8·32	+53	51	11·3
	3		11	12·42	54	4	35·2
	5		7	9·87	54	14	11·0
	7	2	3	3·43	54	19	50·8
	9	1	58	56·02	54	21	27·8
	11		54	50·81	54	18	57·3
	13		50	51·14	54	12	17·6
	15		47	0·38	54	1	29·6
	17		43	21·88	53	46	37·7
	19		39	58·79	53	27	48·8
	21		36	53·99	53	5	13·1
	23		34	10·09	52	39	3·2
	25		31	49·22	52	9	33·6
	27		29	53·06	51	37	0·3
	29	1	28	22·83	+51	1	40·1

FIREBALLS.—On Sunday evening, October 21, there appear to have been a remarkable prevalence of brilliant meteors. They were noticed at about 8h. 35m., 8h. 40m., 9h. 30m., 10h. and 11h. 58m. The first of these was a magnificent object, and it lit up the sky with three flashes which many people mistook for ordinary lightning. The night was very cold and clear throughout the country, and a great number of descriptions of the fireball alluded to have been published in the newspapers. Its flight was exceedingly slow from S.W. to N.E., and it appears to have been directed from a radiant point either in Capricornus or Aquila. The accounts are, however, somewhat conflicting. Near its disappearance the meteor had a height of between 20 and 30 miles over the Midlands, and a detonation was noticed at several places, including Tewkesbury and Clun, Shropshire.

On October 27, 11h. 42m., a magnificent meteor was seen by Mr. Denning at Bristol, traversing a path from 79° + 33° to 56° + 24¾°, and directed from a radiant at 136° + 34°. The object left a brilliant, irregular streak, one section of which remained visible in an opera glass for 13 minutes, during which time it drifted 17° in a southerly direction.

TEMPERATURE OBSERVATIONS DURING SOLAR ECLIPSE.—Mr. C. Martin made a systematic series of temperature observations during the eclipse of the sun on May 28, 1900, and his results are published in the *Scientific Proceedings of the Royal Dublin Society*, vol. ix. pt. 3, pp. 362–364. The observations were made with two instruments, one having a black bulb, the other with a white one. These were mounted about an inch apart on a black wooden post, some six feet high, the bulbs being six inches from any part of the woodwork, and pointed directly towards the sun. Parts of the first stages of the eclipse were rendered inactive by clouds, but for a period of two hours good readings were obtained. These are plotted as curves, the results from the two instruments being given both individually and in combination, the agreement being very close; if anything, the white bulb thermometer moved less quickly than the black,

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and is thus the less sensitive of the two instruments. An examination in detail of these curves shows that the temperature was at its lowest about eight minutes after the middle of the eclipse, and began to rise rapidly as the eclipsed portions of the sun became less. The highest reading with the black bulb thermometer before the eclipse began was 63°·7, the lowest during eclipse being 35°·7, showing a fall of 28°. With the white bulb the corresponding readings were 15°·6 and 3° respectively, showing a drop of 12°·6.

DOMENICO CIRILLO AND THE CHEMICAL ACTION OF LIGHT IN CONNECTION WITH VEGETABLE IRRITABILITY.

ONE hundred and one years ago, on October 29, 1799, Domenico Cirillo, the Neapolitan Linnæus, was hanged on the market-place of Naples, together with some of the noblest among Italian men of letters and science. It is especially fitting to remember Cirillo in England, the country which he visited and where he had many friends, and for the literature and science of which he showed a special predilection—a country which unfortunately had such a fatal influence upon his destiny.

The Cirillos of Grumo, a village of Terra di Lavoro, were a family of doctors, naturalists and artists. At the beginning of the eighteenth century Nicola Cirillo was famed, both as a physician and a botanist. Following the best traditions of Neapolitan science, the traditions of Pinelli, of Imperato, and of Maranta, Nicola Cirillo instituted a private botanical garden, the only one then existing in Naples. In 1718 he became a Fellow of the Royal Society of London, and in connection with this Society, then presided over by Sir Isaac Newton, Nicola Cirillo began to collect meteorological data on the climate of Naples. After his death, in 1734, his botanical garden and his collections, together with the famous herbarium of Ferrante Imperato, were preserved, and the garden improved with the more recent systems of classification by Sante Cirillo, painter and naturalist, whose house became a centre of the learning and culture of Naples.[1]

Domenico Cirillo was born in 1739, and so profited by the education and influence of Sante, his uncle, of Nicola Capasso, Francesco Serao, and of other teachers, that at the age of twenty-one, in 1760, he successfully competed for the chair of botany in the University of Naples. Domenico Cirillo, indeed, followed in the track of Nicola, and soon became known both as a botanist and as a physician. In numerous botanical excursions he visited the greater part of the provinces of Southern Italy and Sicily; and he was the first to organise in this country a regular botanical survey, sending out pupils and assistants to collect in different provinces. Thus not only many rare plants were described in his "Fascicoli Plantarum rariorum Regni Napolitani," begun in 1788, but several new species were discovered. At present, in the Italian flora, about thirteen species of phanerogams are retained as first discovered and described by Cirillo.

That period, when men worked under the spell of Linnæus, was a time of great botanical fervour, of *furore botanico* to use Cirillo's expression, in the collecting and investigating of plants. Of Cirillo's early connection with Linnæus, botanists are still reminded by the name of the *Cyrillae*, which the great Swede dedicated to his young Neapolitan correspondent. Indeed, the devotion of Cirillo for Linnæus was so great that, following the impulse of his enthusiastic nature, he raised a monument to him in the old botanical garden of the Cirillo family.

Induced by Lady Walpole, Cirillo visited France and England, becoming connected with D'Alembert, Diderot, Nollet, Buffon, Franklin, Sir John Pringle, and especially with William and John Hunter. He was elected a Fellow of the Royal Society. In 1771 he published in the *Philosophical Transactions* an account of the Manna Tree of Calabria, Sicily and Monte Gargano, describing the method of extracting the manna. The *Philosophical Transactions* also contain his observations, made near Taranto, on the effect of the tarantola bite; Cirillo confirms what Serao, in 1742, had already written on *Tarantism*, dispelling the absurd superstition of the music-cure supposed to be effected by dancing the Tarantella. He observes how in Sicily the tarantola is never dangerous, and the music-cure is unknown.[1]

In the latter part of the eighteenth century, while the Neapolitan kingdom was freeing itself more and more from the baneful Spanish influence, during the early years of the reign of Ferdinand IV. and Maria Carolina of Austria, a spirit of reform and progress had risen in South Italy, and a new impulse was given to research in natural sciences. In medicine, after Francesco Serao and Domenico Cotugno, Cirillo rose above the rest. The researches and teaching of Giovanni Maria Della Torre and of Cirillo opened a new field to the Neapolitan naturalists in microscopical investigations. And around Cirillo, again, a new school of botanists and zoologists and of chemical investigators arose, among whom we may record the names of Filippo Cavolini, Vincenzo Briganti, Gaetano Nicodemi, Antonio Barba, Saverio Macrî, Antonio Fasano, Nicola Pacifico, Vincenzo Petagna, Matteo Tondi, Nicola Andria, Vincenzo Comi. The discoveries of Alberto Fortis in 1783, near Molfetta, where he observed the richness of the soil in nitrates, led to investigations in Naples on the origin of nitre, in which Fortis himself, Melchiorre Delfico, Giuseppe Giovene, Giuseppe Vairo and Zimmermann were chiefly engaged. In geological and mineralogical research Giov. M. Della Torre took the lead, and with him, or shortly after him, worked Ascanio Filomarino duca della Torre, Domenico Salsano, Gius. Gioeni, Gaetano De Bottis, Luigi De Curtis, Vincenzo Santoli, Domenico Tata, Scipione Breislak, Camillo Pellegrini. In 1788 Lazzaro Spallanzani began his tour to the volcanic regions of Southern Italy and Sicily. In those days Sir William Hamilton, during the many years of his residence in Naples, collected information on the Phlegrean Fields, while Ascanio Filomarino was forming his Vesuvian Museum, destined to so short an existence; for the museum and all the other scientific collections in the Filomarino Palace were destroyed in January 1799, when the unfortunate duke and his brother, Clemente Filomarino, the poet (the translator of Young's poems), were burnt as Jacobins by the infuriated Royalist mob.[2]

During this same period some of the more important foreign works were translated into Italian and published in Naples; such as the works of Stephen Hales, of Priestley, Linnæus, and the Agricultural Encyclopædia of Rozier.[3]

Omitting here all mention of his medical and other publications, Cirillo's chief works on botany and entomology were the following:—"Tabulæ botanicæ elementares," 1773; "De essentialibus nonullarum plantarum characteribus," 1784; "Entomologia Neap. Specimen primum," 1787-1790; "De Cypero Papyro," 1787, re-edited at Parma in 1796; "Fundamenta botanica, sive philosophiæ botanicæ explicatio," 1787; "Plantarum rariorum Regni Neapolitani," fasc. i. 1788, fasc. ii. 1793; "Discorsi Accademici," 1789, re-edited in 1799.

In the field of vegetable physiology, the discoveries of Cirillo on the irritability of plants are noteworthy. In that field, together with his contemporary, G. B. Dal Covolo, Cirillo is the

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[1] Ferrante Imperato, whose herbarium was preserved in the Cirillo collections, lived at the end of the sixteenth century. In writing his "Historia naturale," printed in Naples in 1599, Imperato put together a museum which soon became known in Europe; for besides having for fellow-workers in Naples B. Maranta and Fabio Colonna, Imperato corresponded with P. A. Mattioli, Gaspard Bauhin, Ulisse Aldovrandi, Melchiorre Guilandino, and others of the foremost botanists of the time. His herbarium is said to have been composed of eighty volumes. The museum of Imperato got dispersed during the plague of 1656, and Nicola Cirillo eventually obtained possession of only nine volumes. After the sacking of Domenico Cirillo's house in 1799, one volume only of the Imperato herbarium was saved, and is now in the Biblioteca Nazionale of Naples. It contains 440 dried plants, *i.e.* about one-seventh of all the plants identified in the days of Imperato and Bauhin. This herbarium, together with the herbarium of Cesalpino, is among the rarest of botanical relics.

Of the herbarium of Domenico Cirillo a small remaining portion is now preserved in the botanical museum of the Agricultural College of Portici, in the care of Prof. O. Comes.

[1] The music-cure for the tarantola bite is still practised by peasants, especially women, in some parts of the province of Lecce and in Calabria. In Cirillo's days the belief in the dangerous and strange effects of the bite of the tarantola was held even by persons high in authority. See Andrea Pigonati, "Sul Tarantismo," Opuscoli Scelti ii. (Milano, 1779). Compare Franc. Serao, "Della Tarantola o sia Falangio di Puglia" (Napoli, 1742).

[2] Duca della Torre, "Descrizione del Gabinetto Vesuviano da lui posseduto" (Napoli, 1796, 2da ed.).

[3] The works of Hales were translated by a lady, Maria Ardinghelli; St. Hales, "Statica dei Vegetabili ed Analisi dell' Aria, trad. dall' Inglese con varie annotazioni da M. A. Ardinghelli" (Napoli, 1756).

St. Hales, "Emastatica, ossia Statica degli Animali. Esperienze idrauliche fatte sugli animali viventi" (Napoli, 1776).

Gius. Priestley, "Sperienze ed Osservazioni sopra diverse Specie di aria, trad. dall' Inglese" (Napoli, 1784).

The translation of Rozier's Encyclopædia was begun in 1783, and was due to the Società Letteraria di Napoli, of which Cirillo was one of the leading members.

Vincenzo Petagna began editing the "Species Plantarum" of Linnæus,

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